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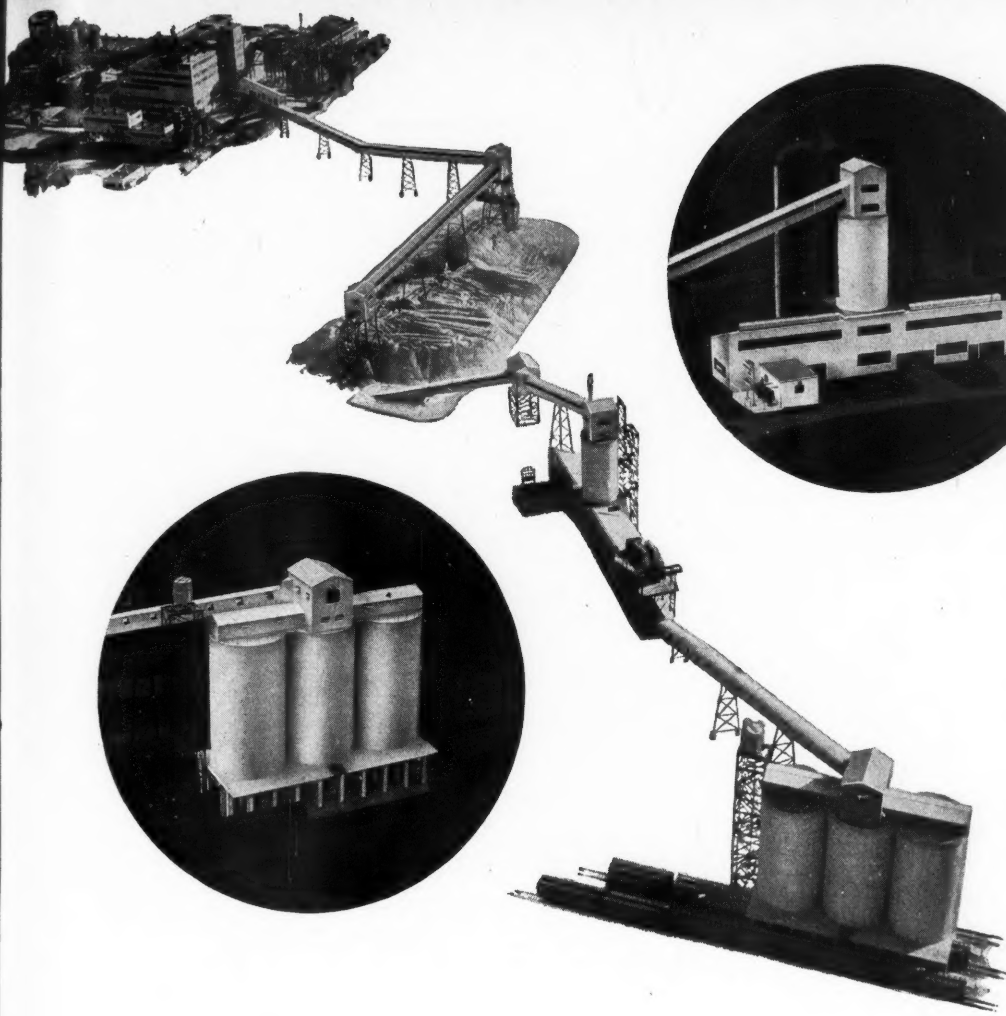

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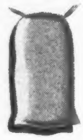

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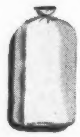

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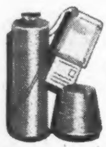

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The American FERTILIZER

Vol. 110 APRIL 16, 1949 No. 8

Fertilizer Progress in Bizonal Germany

By K. D. JACOB* and RALPH W. CUMMINGS**

(Continued from the issue of April 2, 1949)

Prior to the currency reform in June, 1948 labor, both skilled and unskilled, was in short supply throughout the fertilizer industry and most of the related industries. A principal cause of the shortage was the generally low efficiency of labor (about 50% of the prewar level) resulting in part from the entirely inadequate supply of food. Other factors included shortage of clothing, shoes, other necessities, and work incentives of all kinds; the low wages prevailing in the fertilizer industry and the heavy or disagreeable nature of much of the work; and the universal lack of adequate housing facilities. The currency reform has helped the labor situation (1) by forcing nonessential employees from the padded payrolls of certain industries and organizations, (2) by reducing the number of persons engaged in black-market activities, and (3) by bringing larger quantities of consumer goods on the open market.

Rehabilitation and operation of fertilizer plants has been hampered by shortages of practically all kinds of equipment and materials. The currency reform and the European recovery program have resulted in much improvement in this situation. Electric power continues, however, to be a limiting factor in a number of instances.

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**North Carolina Agricultural Experiment Station, Raleigh, North Carolina

Production and Supplies

With the possible exception of nitrogen the prewar manufacture of fertilizers in Bizonal Germany exceeded the consumption of such materials in the area (*42, 43, 44*)[6]. Subsequently, the production has been greatly reduced by damage to plants; shortages of repair and building materials, equipment, power, transportation, and labor; insufficient supplies of coal, certain other raw materials, and necessary chemicals; large decreases in manufacture of coke and steel; and by other factors. As previously pointed out, rehabilitation of the industry and its enlargement to meet the expanded fertilizer requirements of the Bizone is of major importance to the German food supply and to the establishment of a sound economy in the country. The Military Government is concentrating attention on the problem and considerable progress has been made in the past two years.

As of April, 1948 it was estimated that production of fertilizer, especially phosphate, would not reach a level sufficient fully to meet the requirements until some time after 1951 (Table 1, Fig. 3). Subsequent developments indicate, however, that the situation will likely improve more rapidly than was then anticipated, so that the realized produc-

[6]The numerous reports issued by the Office of Technical Services, U. S. Department of Commerce, on German fertilizers and closely related subjects include several (*5, 6, 10, 34, 46, 51, 62, 70, 72, 77, 78*) that are not referred to elsewhere in this paper.

tions may exceed the forecasts given in this paper.

The productions of nitrogen, P_2O_5, and K_2O for fertilizer in 1947–1948 are estimated to have amounted to 165,000, 125,000, and 410,000 tons, respectively, corresponding to increases of 32, 29, and 39 per cent over the respective productions in 1946–1947, and to 230, 198, and 109 per cent over those in 1945–1946. The 1947–1948 production of nitrogen fertilizer amounted to about 52 per cent of the requirement, as compared with 71 per cent for K_2O and only 35 per cent for P_2O_5. If the production programs for the later years are realized the proportionate fulfillment of the requirements will gradually increase and in 1950–1951 it will reach 85 per cent for nitrogen, 60 per cent for P_2O_5, and nearly 94 per cent for K_2O.

In 1947–1948 the productions of nitrogen, phosphate, and potash amounted to about 68 to 76 per cent of the estimated plant capacities for these materials (Table I, Fig. 3). Subsequently, the expected annual productions represent increasingly higher proportions of the capacities and they reach 87 to 90 per cent in 1950–1951. It will be noted, however, that with the exception of potash in 1950–1951, operation of the plants at 100 per cent of the capacity figures would not supply the indicated fertilizer requirements of the Bizone.

As previously mentioned the inadequate production of fertilizers in the Bizone has been supplemented by imports from other European countries and the United States. Imports of nitrogen in 1947–1948 totaled about 77,000 tons, and comprised shipments from the United States, Austria, United Kingdom, and Chile. In the same year, imports of P_2O_5 amounted to about 81,000 tons, chiefly from Luxemburg (basic slag) and Belgium (superphosphates). Despite the fact that the production has been considerably below the domestic requirement, some potash has been exported from the Bizone in each of the postwar years. With one exception (10,000 tons of potassium sulfate to the United States in 1947) these shipments have gone to nearby European countries. Under an exchange arrangement the Bizone obtained 12,900 tons of K_2O from the Soviet Zone in 1947–1948.

Nitrogen

The Bizonal production of nitrogen fertilizers is derived from three sources—cyanamide, byproduct ammonia, and synthetic ammonia—among which synthetic ammonia is by far the most important. The synthetic ammonia primary plants, the synthetic ammonia fixation plants, and the cyanamide plants are listed in Table II, while Table III gives the plant capacity and production of the various types and sources of nitrogen expected in the fiscal years 1947–1948 to 1950–1951. The estimated nitrogen production by end-use is shown in Table IV.

Cyanamide. The two plants for production of cyanamide (Table II), both of which are now in relatively good condition, had a prewar total capacity of about 74,000 tons of nitrogen annually (Knapsack 24,000, Trostberg 50,000). For 1947–1948 the total capacity is estimated at 60,000 tons of nitrogen (Knapsack 20,000, Trostberg 40,000). No further increase in capacity is planned for Knapsack, but the practical operating capacity at Trostberg is expected to be raised to 50,000 tons in 1948–1949. The facilities and processes for production and handling of carbide and cyanamide at these plants and elsewhere in Germany are described in several reports (*7, 15, 19, 20, 24, 59, 64*).

TABLE II. NITROGEN FERTILIZER FACILITIES IN THE BIZONE[1]

Company	Location of Plant
Synthetic Ammonia, Primary Nitrogen	
Bergwerke Gesellschaft Hibernia A. G.	Wanne-Eickel, Westfalen
Gewerkschaft Ewald	Herten, Westfalen
Gewerkschaft Victor	Castrop-Rauxel, Westfalen
Ruhr-Chemie A. G.	Oberhausen-Holten, Rhein Provinz
Union Rheinische Braunkohlen Kraftstoffe A. G.[2]	Wesseling, Rhein Provinz
Calcium Cyanamide	
Süddeutsche Kalkstickstoffwerke A. G.	Trostberg, Bayern
A. G. für Stickstoffdünger	Knapsack, Rhein Provinz
Ammonia Fixation[3]	
Bergwerke Gesellschaft Hibernia A. G.	Wanne-Eickel, Westfalen
Chemische Fabrik Kalk G. m. b. H.	Köln-Kalk, Rhein Provinz
Gewerkschaft Victor	Castrop-Rauxel, Westfalen
I. G. Farbenindustrie A. G.	Höchst, Hessen
Ruhr-Chemie A. G.	Oberhausen-Holten, Rhein Provinz
[4]	Langelsheim and Embsen

[1]In addition to the listed facilities, byproduct ammonia is produced by numerous coke ovens, almost entirely in the Ruhr. Also, small quantities of ammonia are produced by a number of city gas plants.

[2]Formerly a synthetic gasoline plant; commenced production of ammonia in September, 1947.

[3]Exclusive of byproduct-ammonia fixation.

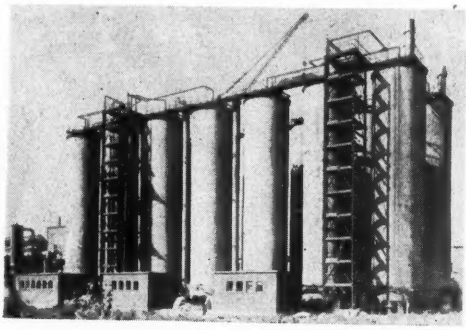
[4]Two concentrated nitric acid plants scheduled to commence production of fertilizer in the year ending June 30, 1950.

The facilities for carbide production at Knapsack were damaged during the war, but repairs are well in progress. While the present capacity for cyanamide is estimated at 20,000 tons of nitrogen annually, the production in 1947–1948 was only about 2,200 tons, and the annual output is scheduled to remain at some 2,000 tons through 1950–1951. This is because of the pressing need for carbide for other purposes, principally manufacture of acetylene for cutting and welding, together with the plant's high over-all requirement of coal for cyanamide production. At this plant, electric power for carbide manufacture is generated by means of brown coal from a local deposit. In addition to the intermittent process, Knapsack has facilities, perhaps unique, for continuous production of cyanamide by means of rotary furnaces (*15, 24, 59*). The continuous process, installed in 1935–1936, is said to have presented no serious operating difficulties. It is reported to be more economical of raw materials, labor, time, and factory space and to produce higher grade cyanamide than the intermittent process.

TABLE III. PLANT CAPACITY AND PRODUCTION OF TYPES OF NITROGEN IN THE BIZONE

Fiscal Year[1]	Capacity,[2] Tons N	Production, Tons N	Production, % of Capacity
Synthetic Ammonia, Primary Nitrogen[3]			
1947–48	197,000	126,000	64.0
1948–49	248,000	179,000	72.2
1949–50	278,000	230,000	82.7
1950–51	308,000	280,000	90.9
Cyanamide[4]			
1947–48	60,000	30,000	50.0
1948–49	70,000	41,000	58.6
1949–50	70,000	45,000	64.3
1950–51	70,000	45,000	64.3
Byproduct Ammonia[5]			
1947–48	[6]37,000	37,000	100
1948–49	[6]50,000	50,000	100
1949–50	[6]65,000	65,000	100
1950–51	[6]70,000	70,000	100
Fixation of Synthetic Ammonia[7]			
1947–48	146,000	[8] 98,000	67.1
1948–49	174,000	139,000	79.9
1949–50	204,000	180,000	88.2
1950–51	252,000	225,000	89.3
Total Nitrogen[9]			
1947–48	294,000	193,000	65.6
1948–49	368,000	270,000	73.4
1949–50	413,000	340,000	82.3
1950–51	448,000	395,000	88.2
Total Fertilizer Nitrogen[10]			
1947–48	243,000	165,000	67.9
1948–49	294,000	230,000	78.2
1949–50	339,000	290,000	85.5
1950–51	392,000	340,000	86.7

[1]Ending June 30.
[2]Output capacity. Allowance is made for shutdown for repairs, replacement of equipment, and other normal interruptions to operation.
[3]Including ammonia for technical and industrial uses.
[4]All for fertilizer. Only small quantities of cyanamide are used for other purposes.
[5]From coke ovens only. Additional small quantities are produced by city gas works.
[6]Estimated production, all in form of ammonium sulfate for fertilizer.
[7]All for fertilizer. It is estimated that about 10% of the input nitrogen is lost during handling of ammonia and its conversion into fertilizer compounds.
[8]Includes about 2,700 tons of nitrogen fixed from synthetic ammonia produced at Oppau, French Zone.
[9]Synthetic ammonia, cyanamide, and byproduct ammonia.
[10]Cyanamide, byproduct ammonia, and fixation of synthetic ammonia.



Nitric Acid Absorption Towers. Osterreichische Stickstoffwerke A. G., Linz, Austria. Summer, 1947

The carbide supply for Trostberg, one of the oldest cyanamide plants in Europe, is manufactured at Hart by means of hydroelectric power. As compensating thermal-electric power is not available in the locality, production of cyanamide is subject to

TABLE IV. BIZONAL PRODUCTION OF NITROGEN BY END-USE

	Tons N in Fiscal Year[1] 1947–48	1948–49	1949–50	1950–51
Total production	193,000	270,000	340,000	395,000
Industrial and technical	20,000	25,000	30,000	30,000
Loss[2]	8,000	15,000	20,000	25,000
Finished fertilizer	[3]165,000	230,000	290,000	340,000

[1]Ending June 30.
[2]Loss (10%) during handling of synthetic ammonia and its conversion into fertilizer compounds.
[3]Includes about 2,700 tons of nitrogen fixed from synthetic ammonia produced at Oppau, French Zone

shortage of electricity during periods of low water. Thus, the output of cyanamide at this plant was greatly curtailed by the serious drought that prevailed throughout western Europe in 1947. Operations at both Trostberg and Knapsack have been handicapped by shortage of lime.

Byproduct Ammonia. Prior to the war some 90,000 to 100,000 tons of nitrogen as byproduct ammonia from coke ovens were obtained annually from more than 100 plants in the Bizone, almost entirely in the Ruhr. The production of such nitrogen is estimated at 37,000 and 70,000 tons for the fiscal years 1947–1948 and 1950–1951, respectively (Table III). In addition to coke-oven ammonia, there is a small output (probably less than 2,000 tons of nitrogen annually) of byproduct ammonia from city gas works. Byproduct ammonia is fixed at the coke plants in the form of ammonium sulfate, practically all of which is used as fertilizer. The plants have high priority on sulfuric acid for this purpose, and at present they are being supplied with sufficient acid to satisfy their needs. Recovery of byproduct ammonia in Germany is discussed in two reports by British investigators (*8*, *40*).

Synthetic Ammonia. The Bizone has five synthetic ammonia plants, of which four are in the Ruhr area and were producing ammonia before the war (Table II). The fifth, located at Wesseling, south of Köln, was formerly a synthetic gasoline plant. All of the plants, especially Victor (*88*) and Ruhr-Chemie, were damaged during the war. Some 4,000 bombs are said to have been dropped in the area occupied by Ruhr-Chemie, while the Victor plant is reported to have received 400 to 500 bombs during two raids in September and November, 1944. Both plants resumed operation on a small scale in the spring of 1946. The total capacity of the four Ruhr plants before war damage is variously estimated at 190,000 to 265,000 tons of primary nitrogen annually. Data obtained by the writers in conversations with plant officials and other informed persons indicate, however, that the capacity before damage was actually about 220,000 tons. This compares with a programmed capacity of 152,000 tons for the four plants in 1947–1948 and 188,000 tons in 1950–1951. All of the Ruhr plants are old. Much of the equipment now in operation is inefficient and no small part of it is running on borrowed time. Early replacement of such equipment is essential to achievement of the production goals, as indicated by the fact that the ammonia plant of Ruhr-Chemie was shut down for some time by the explosion of an ammonia-synthetic unit in late April, 1948. Germany's synthesis ammonia and nitric acid industries are discussed in a number of reports (*11*, *13*, *25*, *31*, *32*, *35*, *39*, *40*, *41*, *49*, *64*, *87*, *88*).

The Wesseling plant is especially important to the synthetic ammonia program. The planned capacity for 1950–1951 is 120,000 tons of nitrogen or 39 per cent of the total Bizonal capacity for nitrogen as synthetic ammonia. The plant, originally built for production of synthetic gasoline, was completed in 1941 and heavily bombed in 1944. Conversion of the plant to ammonia manufacture was undertaken about the middle of

War Damage at Fertilizer Plant of I. G. Farbenindustrie A. G., Ludwigshafen-Oppau. April, 1948

1947. The first production of ammonia was in September, 1947 and the output in April, 1948 was at the rate of about 17,000 tons of nitrogen annually. Power is generated from raw brown coal from a nearby (18 kilometers) deposit, and hydrogen is produced with brown coal briquettes. There are eight synthesis units, of which four are scheduled for ammonia production and one for methanol. The rated capacity of each ammonia unit is 30,000 tons of nitrogen per year. The capacity of the methanol unit is 100 tons per day. Currently, two units have been converted for ammonia production and one for methanol. Wesseling has no facilities for converting ammonia into fertilizer compounds, and installation of such facilities is not planned. At present the ammonia is shipped to Höchst for conversion, and Höchst will continue to handle most if not all of the output.

(Continued on page 26)

Kressler to Direct Chase Bag Company Detroit Office

J. F. Kressler, former sales representative of Chase Bag Company's Cincinnati office, has been transferred to Detroit where he will direct the operations of that office, according to an announcement made by R. N. Conners, Chase Vice-President and General Sales Manager. Mr. Kressler joined the company's sales force shortly after his graduation from the University of Toledo in 1937. He served in the Army Air Corps during World War II.

Wood Named Vice-President of Plant Food Corporation

The recent promotion of W. R. Wood to the position of Vice-President in charge of sales consolidates the fertilizer and insecticide departments of Plant Food Corporation, Los Angeles, Cal.

To facilitate this consolidation, a new plant is being installed at 3707–11 Medford Street, Los Angeles. This move is motivated by the company's desire to offer better service to their customers by making it possible for them to pick up split loads of fertilizer and insecticides. The addition of this plant gives Plant Food Corporation a total of four manufacturing units, located at Rocky Ford and Greeley, Colorado, and at Bakersfield and Los Angeles, California.

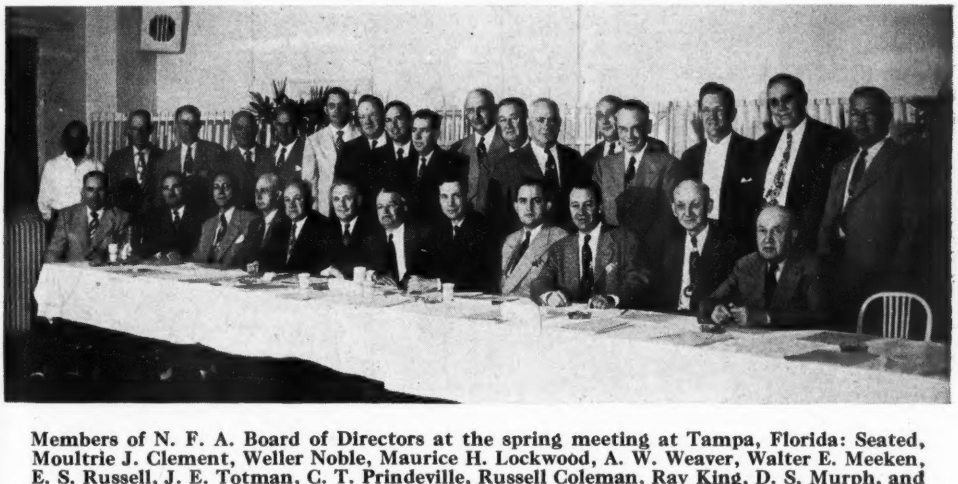
Well-known in the agricultural chemical industry, W. R. Wood has been connected with the manufacture and sale of insecticides for the past 17 years, and joined Plant Food Corporation in 1945 as manager of the company's new insecticide division.

New Universal Vibrating Screen Catalog

The Universal Vibrating Screen Co., of Racine, Wisc., has recently issued a new 32 page catalog on their line of vibrating screens which are used in the production of fertilizers, agricultural lime, stone, gravel and a variety of materials ranging in size from two and one-half inches to 100 mesh. The Universal Screen is noted for its simplified design and construction which permits it to be adapted into a great variety of processing systems.

The vibrating mechanism operates with a minimum of noise, imparting an oval movement of a little more than one-eighth inch in height to the upper frame, at a speed of 1800 per minute. This enables it to give maximum production with either dry or moist material.

The screens come in 30 and 42 inch widths, with lengths up to 96 inches. The 42 inch screens are made in both single and double deck styles. A copy of the new catalog, No 109, can be obtained by writing to the company's offices at Racine, Wisc.



Members of N. F. A. Board of Directors at the spring meeting at Tampa, Florida: Seated, Moultrie J. Clement, Weller Noble, Maurice H. Lockwood, A. W. Weaver, Walter E. Meeken, E. S. Russell, J. E. Totman, C. T. Prindeville, Russell Coleman, Ray King, D. S. Murph, and C. D. Shallenberger. Standing, E. A. Geoghegan, H. A. Parker, M. S. Hodgson, H. B. Fultz, Louis Ware, J. H. Owens, A. A. Schultz, L. D. Hand, M. G. Field, C. R. Martin, F. N. Bridgers, John E. Powell, L. Graham Campbell, S. F. Elwood, John A. Miller, A. W. Higgins, and J. A. Chucka

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Administration Farm Program Proposes Radical Changes

The long range farm price support program of the Administration was presented to the Agricultural Committees of the House and Senate on April 7th by Secretary of Agriculture Brannan. The principal feature of the plan, and the one which will undoubtedly arouse the most criticism, has to do with the support for perishable and non-storable crops, which make up about 75 per cent of farm marketings. Under the new plan the government would not interfere with price movements by purchasing surplus portions of crops such as potatoes and thus keeping the general market price at predetermined levels. Instead, the former would sell his crop for what it might bring at the current market. If this was below a level which had been computed as a minimum income standard, the government would reimburse the farmer for this difference.

This plan has the advantage of lowering prices for the consumer; on the other hand, it relieves the farmer of the responsibility for helping to maintain an orderly market, in view of the fact that, no matter what the market price is, the government must make up the difference. The resulting bill to the tax payers would consequently be very much higher than it is under the present program.

The present system of loan price support for the storable crops—corn, wheat and other grains, cotton, tobacco, peanuts, soybeans, flaxseed, dry beans and peas, wool—would be retained but a new means of determining the support price would be provided.

The new plan would set up a total farm income goal designed to assure agriculture at least as much buying power as it had in the first ten years of the previous twelve-year period. After this determination, the program then would determine a corresponding schedule of commodity price or return guarantees. The guarantee for an individual product would be determined by multiplying the average price of a commodity during the ten years immediately preceding by the ratio of (1) the minimum income goal, (2) the actual average level of cash receipts from farm marketing during these same ten years.

Under this plan, the minimum income goal for 1950 would be $26,234,000,000. This is arrived at by taking the average annual purchasing power of cash receipts for the ten years 1939–48, amounting to $18,218,000,000 and multiplying it by the March 15 parity index of 1.44. In relation to the average cash receipts of $20,980,000,000 for

the ten years 1940–49 an adjustment factor of 1.25 is arrived at, being the ratio of the average cash receipts to the minimum income standard.

A feature of the program is the ceiling of $25,000 set on the amount of production protected by price support for any individual farmer. Provision would also be made for cooperation in the soil conservation program, as well as for marketing quotas and acreage allotments.

Secretary Brannan presented the program in outline only. When specific legislation is introduced in Congress, it will undoubtedly reflect the reactions which have been created in farm circles by this proposal.

Changes in Mathieson Operating Personnel

Mathieson Chemical Corporation has made several changes in operating management due to the increase in the number of plants resulting from recent acquisitions. On March 31st, the directors appointed Dr. Carl F. Prutton vice-president-director of operations of all the company's plants and Arthur T. Bennett, vice-president, was placed in charge of the eight plants acquired from Southern Acid and Sulphur Company. R. B. Worthy and J. F. Newell were named vice-presidents.

Thomas S. Nichols, president of the company, announced that Dr. Prutton, who joined Mathieson last year as director of research, will have charge of research and supervise operations of all the company's plants including those recently acquired. His headquarters will be in the Mathieson New York offices. Mr. Bennett will have his headquarters in Houston. Mr. Worthy will be in charge of the plants acquired from Standard Wholesale Phosphate and Acid Works as well as the Saltville, Va., plant, of which he has been manager. Mr. Newell remains at Lake Charles, La., where he has been in charge of the alkali and ammonia plants.

Before joining Mathieson in 1948, Dr. Prutton was head of the Department of Chemistry and Chemical Engineering at Case School of Applied Science, a consultant to a number of chemical companies and, from 1942 to 1944, Chief of the Process Development Branch of the Office of Rubber Director and consultant to the War Production Board. He is the author of many scientific papers in the fields of chemistry and chemical engineering, holds many patents, and is a member of numerous scientific organizations. He received his Bachelor's and Master's degrees from the Case School and his Ph.D. at Western Reserve University.

Mr. Bennett joined Mathieson as a technical assistant in 1933. Subsequently he served as superintendent of the soda ash department at the Lake Charles plant, as assistant manager at the Saltville plant, assistant director of operations in New York, manager of operations, and in 1946 was made vice-president-manager of operations. A native of Saltville, he obtained his education at Cass Technical School in Detroit, Mich., Detroit University and Syracuse University. He is a member of the Engineers Club.

Born in South Dakota, Mr. Worthy has been with Mathieson since 1925. Starting as an assistant engineer at the Saltville plant, he held successive posts at the plant as general

Arthur T. Bennett

Carl F. Prutton

superintendent, head of the engineering department, assistant manager, acting manager and in 1943, was made manager of the Saltville operations. He is a member of the American Society of Civil Engineers and the Engineers Club.

Mr. Newell is a native of Michigan and received his B.S. and M.E. degrees from the University of Michigan. He came to Mathieson in 1931, after several years with other chemical companies, to become general superintendent of the Saltville plant. In 1939, he was named assistant manager of the Niagra Falls plant and in 1944 became manager of the Lake Charles operations. He is a member of the American Chemical Society.

U. S. D. A. Appropriation Increased

The Appropriations Committee of the U. S. House of Representatives has recommended direct appropriations totaling $701,122,000 for the Department of Agriculture for the 1950 fiscal year. This is 22 per cent above the current year's appropriation but is $25 million less than the amount recommended by the Budget Bureau.

Included in the bill were $19,000,000 for continuing studies under the research and marketing act of 1946, an increase of $5,150,000 over the current year's funds. For the bureau of plant industry, soils and agricultural engineering the committee allotted $8,022,000, including $1,900,000 for work on soils, fertilizers and irrigation. The bureau of entomology and plant quarantine was allowed $10,398,000, including $2,993,000 for insect investigation and $3,364,000 for insect and plant disease control. The bureau of agricultural and industrial chemistry was provided with $5,653,000.

Carswell and Vayo Elected Vice-Presidents of St. Regis. Paper Co.

Following a meeting of directors of St. Regis Paper Company on April 8th, announcement was made of the election of Arch Carswell and R. L. Vayo as vice-presidents.

Mr. Carswell, who joined the company in 1928, became general sales manager of the company's Multiwall Bag Division, with headquarters in New York, early in 1948. Prior to that he had been Pacific Coast manager of the Multiwall Bag Division. Mr. Carswell will continue in charge of sales for the division.

Mr. Vayo, who joined the company in September 1945, to take charge of pulp sales, had previously been manager of the Foreign Department of Brown Company and Brown Corporation. He was named to the War Production Board in May 1942, serving as Chief of the Lend-Lease Division of the Allocation Office, of the Forests Products Bureau until July 1943, when he re-joined the Brown Company in New York. In March 1943, he was recalled to the W. P. B. as a "dollar-a-year man." Mr. Vayo will now direct sales of Kraft paper and board as well as pulp.

February Sulphate of Ammonia

While the total output of by-product sulphate of ammonia during February showed a decline from the January figures, this drop is due solely to the shorter month. In fact, according to the figures of the U. S. Bureau of Mines, the output per day showed a slight increase during February. Shipments totaled 76,267 tons during the month, compared with a production of 71,951 tons, leaving stocks on hand at producing plants of only 21,041 tons, which is the lowest figure for quite some time.

	Sulphate of Ammonia		
Production	By-product Ammonia Tons	From Purchased Ammonia Tons	Ammonia Liquor Tons NH_3
Feb., 1949	68,015	3,936	1,965
Jan., 1949	73,990	4,327	2,156
Feb., 1948	67,416	2,104	1,990
Jan.-Feb., 1949	142,005	8,263	4,121
Jan.-Feb., 1948	139,291	4,361	4,084
Shipments			
Feb., 1949	72,239	4,028	1,342
Jan., 1949	73,494	4,107	1,666
Feb., 1948	66,373	2,104	1,988
Stocks on hand			
Feb. 28, 1949	21,041*		695
Jan. 31, 1949	24,705*		625
Feb. 29, 1948	31,988*		926

*Includes stocks from by-product and purchased ammonia.

FERTILIZER MATERIALS MARKET

NEW YORK

No Price Changes on Chemical Nitrogen but Supply Limited, Less By-Product Sulphate of Ammonia Expected Next Season. Feed Manufacturers Taking Available Organics. Superphosphate in Good Supply with Production Adequate. Potash Shipments on Schedule but No Further Foreign Shipments Reported

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, April 13, 1949.

Sulphate of Ammonia

Demand continued excellent from various directions and no price changes were reported. Some authorities think that steel production may decline during the second half of 1949 with the result that there may be less material for sale.

Nitrate of Soda

Shipments continued good for this material but in some sections a shortage is looked for when used for top dressing. Domestic production is said to have been increased.

Ammonium Nitrate

There was a good demand from all sections for ammonium nitrate and no price changes reported. Some producers were slightly behind on deliveries.

Nitrogenous Tankage

Few trades are reported as most buyers are under contract for their season's supplies. The market is generally quoted at $3.50 to $4.00 per unit of ammonia ($4.25 to $4.86 per unit N) according to shipping point.

Castor Pomace

While producers were sold up for nearby positions, the demand was not too heavy as most buyers were already under contract. Production of this material is said to be slowing down.

Organics

While fertilizer interest in organic fertilizer materials was rather limited for prompt shipment, feed buyers picked up available offerings of tankage and blood at steady prices with last sales made around $8.00 per unit of ammonia ($9.72 per unit N) f.o.b. shipping points. Producers were well sold up. Soybean meal firmed up considerably for prompt shipment and last sales were made at $61.00 per net ton, f.o.b. Decatur, Ill. Linseed meal, on the other hand, was rather weak in price and sold down to $60.00 per ton, f.o.b. Minneapolis, bulk basis. Cottonseed meal was slightly firmer with most sales being made to the feed trade and fertilizer people showing little interest.

Fish Meal

Material for quick shipment was hard to locate and sales were made as high as $3.00 per unit of protein, f.o.b. shipping points. No new sales of fish scrap were reported as fishermen decided in most cases to await the coming catch and see some actual production figures before making further sales.

Bone Meal

This material stands out as the scarcest item on the list. Practically no material is available at any point and buyers have been forced to use what they have on hand sparingly. No great relief is looked for at the end of this season, due to the curtailed production and large demand.

Hoof Meal

Offerings are limited and demand fairly good. Several industrial buyers have been picking up available supplies, with last sales reported around $7.00 per unit of ammonia ($8.51 per unit N).

Superphosphate

This material was in good supply and no shortage reported. At this same time last year a decided shortage was reported and manufacturers were unable to keep up with the demand. A surplus is looked for during the summer months unless production is cut.

Potash

Shipments continued on old contracts to manufacturers and all the April material was quickly sold when tendered recently. No foreign material arrived and the price of the foreign material is getting pretty high for domestic consumers.

PHILADELPHIA

Materials Demand Quiet. Some Re-Sales of Sulphate of Ammonia at Advanced Prices. Demand for Superphosphate Improving

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, April 12, 1949.

The general demand for raw materials is very quiet. Chemical nitrogen is still required in some sections, and resale offerings are more plentiful with prices lower than they have been. Prices of urea compounds and ammonia liquor have been advanced by the producers. Blood and tankage are considerably stronger.

Sulphate of Ammonia.—Demand is still sufficiently strong to keep up with production, and while some producers are reported behind in their deliveries, there have been resale offerings at $60.00 to $65.00 per ton.

Nitrate of Soda.—There is sufficient demand to keep the market in tight position, although domestic production is reported to have increased substantially. Resale offerings are now more frequent.

Castor Pomace.—Shipments continue against contracts. Recent offerings at $21.00 per ton for current delivery have been withdrawn.

Blood, Tankage, Bone.—Blood and tankage have gained considerable strength and market now is $8.00 to $8.25 per unit of ammonia ($9.72 to $10.02 per unit N). Trading, however, is light. Bone meal continues exceedingly scarce with entire production virtually under contract.

Fish Scrap.—Spot material is almost unobtainable, but there have been quotations at $185.00 to $190.00 per ton for 60 per cent meal. For later delivery, meal is offered at $130.00 to $140.00, with scrap at $120.00 to $130.00 per ton.

Phosphate Rock.—The supply is now amply sufficient to meet all demands and the movement to acidulators shows satisfactory improvement.

Superphosphate.—The general demand is quite good with slight shortages reported in some areas. Production on the whole is less than last year and there is no pressure to sell for current delivery.

Potash.—Production is definitely increased and shipments continue to move regularly against commitments. The demand has eased up considerably.

CHICAGO

By-Product Ammoniate Market Firm. Little Advance Buying but Ample Market for Current Production

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, April 11, 1949.

The midwest market on animal ammoniates continues in a very firm position. Present supply and demand position is fairly well balanced, with producers finding very little difficulty in keeping their production sold up for nearby delivery. There is still a reluctance on the part of buyers to make any long range

commitments, but steady demand keeps the material from accumulating in the hands of sellers.

Digester tankage is slightly lower than meat scraps which is rather unusual as the reverse is generally the case. Tankage is selling at $100 to $110 per ton sacked and meat scraps at $110 to $115 per ton, both f.o.b shipping points. Dry rendered tankage is strong at $2.05 per unit of protein delivered nearby destinations or $2.00 per unit, f.o.b. shipping points. Wet rendered tankage is quoted $8.00 to $8.25 per unit of ammonia ($9.72 to $10.02 per unit N), delivered and dried blood last sold at $8.00 per unit ($9.72 per unit N). Steamed bone meal, 65 per cent B.P.L., is nominal at $75 per ton, f.o.b. Chicago, bagged, and raw bone meal $65 to $70 per ton.

CHARLESTON

Shipments of Fertilizers Tapering off in Southeast. Few Materials Contracts for Next Season Placed. More Potash Reported

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, April 11, 1949.

The movement of fertilizers to the farms in the southeast is expected to come to an end in the next few weeks. Most fertilizer manufacturers are concerned with determining the outcome of the present season's operations and are only buying spot material to finish out the season.

Organics.—Interest in nearby shipment organics is exceedingly slack and fertilizer manufacturers generally wish to see the outcome of the present season before making purchases for fall and spring shipment. Some summer shipment organics have been sold, however, but producers are reluctant to quote fall and spring. Prompt nitrogenous tankage is obtainable at $3.00 to $4.00 per unit of ammonia ($3.64 to $4.86 per unit N), in bulk, f.o.b. production points.

Castor Pomace.—Although some summer shipment castor pomace has been sold at around $21.00 per ton in bags, f.o.b. northeastern shipping points, producers generally are unwilling to offer for fall and spring. Movement now is against current contracts.

Dried Ground Blood.—The market around New York is approximately $8.25 per unit of ammonia ($10.02 per unit N), in bulk with the Chicago market at around $8.00 ($9.72 per unit N), with demand rather inactive.

Potash.—1948 imports totaled 35,604 tons of muriate of potash. Movement of domestic potash, due to increased production at two plants, has been in substantial quantity recently. Demand remains steady and prices unchanged.

Phosphate Rock.—Demand continues strong and prices on existing contracts have been reduced as a result of reductions in the price of fuel oil during the last month.

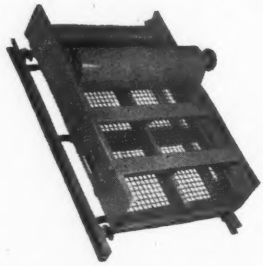
Superphosphate.—There is a definite shortage of superphosphate in certain manufacturing centers in the southeast with shortages developing in certain areas of the mid-west.

Sulphate of Ammonia.—Demand in the southeast is tapering off and some manufacturers report that producers of sulphate of ammonia are approaching them regarding their next season's needs. Prices remain firm and the available quantities are being absorbed.

Ammonium Nitrate.—Demand continues strong with supply inadequate resulting in tight market conditions.

California Fertilizer Sales

The California Department of Agriculture has reported that sales of fertilizers during the final quarter of 1948 totaled 130,558 tons. Mixed fertilizers accounted for 47,136 tons, the remainder being single fertilizer



materials. The latter included: sulphate of ammonia, 18,317 tons; normal superphosphate, 17,667 tons; ammonium nitrate, 10,101 tons; ammonium phosphate-sulphate (16-20-0), 7,330 tons; treble superphosphate, 4,611 tons; calcium nitrate, 3,531 tons; calcium cyanamid, 2,866 tons; activated sewage sludge, 1,710 tons; nitrate of soda, 1,553 tons; ammonium nitrate solutions, 1,454 tons; muriate of potash, 1,015. Liquid mixed fertilizers accounted for 2,601 tons.

Extra Potash Boosts Arkansas Cotton Yields

Need for balance in fertilization for cotton production was clearly shown last year on the McWilliams farm in Hempstead Co., Ark.

As an experiment, Mr. McWilliams divided one of his cotton fields into two parts, relates Assistant County Agent Byron Huddleston. Both plots had the same type soil and both received the same treatment, except that on one field he applied 200 pounds of 5-10-5 complete fertilizer and 75 pounds of 60 per cent potash per acre. On the other half, he used only 200 pounds of 5-10-5. The field receiving 75 pounds extra potash produced 519 pounds of lint per acre, as compared to 350 pounds on the plot that did not receive additional potash.

In another test, one plot received 100 pounds of 60 per cent potash in addition to the 200 pounds of 5-10-5 per acre. Another plot received no extra potash. The one receiving additional potash yielded 1,280 pounds seed cotton per acre, as compared to 800 pounds on the plot not receiving any extra potash.

Grade of the cotton produced on the plot receiving 100 pounds extra potash was one and one-sixteenth, while grade of the other cotton was one and one-thirty-second.

More State Fertilizer Legislation

Kansas

The bill introduced in the Kansas legislature to eliminate tax tags and stamps and substitute the report system of paying the inspection fee passed both houses and has been signed by Governor Frank Carlson. The Kansas law was changed in other respects to conform as nearly as possible to the model fertilizer law which is recommended by the Association of American Fertilizer Control Officials. The registration period is changed to a fiscal year basis, and the tonnage reports are to be filed semi-annually.

Colorado

A new act known as the "Commercial Fertilizer Law of 1949" (S-761) has been introduced in the Colorado Legislature. No radical change from the present law is noted except a 20 per cent minimum plant-food requirement unless 25 per cent of the nitrogen content is in water-insoluble form, in which case the nitrogen is to be guaranteed "Total Nitrogen," "Organic Nitrogen," and "Water-soluble Nitrogen." At the same time other provisions of the bill recognize only water-soluble nitrogen. The minimum plant food content of superphosphate is 18 per cent. The Act is to be administered by the Director of Markets in place of the Department of Agriculture.

Texas

A bill (H. B. 574) has been introduced which would repeal the requirement in the present law that inspection tax tags be attached to containers of fertilizer and substitutes a requirement for the payment of an inspection fee of 25 cents a ton on the basis of quarterly reports on the amount and kind of each fertilizer sold or distributed for

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sale. The bill further provides that "Nothing in this Article shall interfere with fertilizers passing through this State in transit; nor shall it apply to the delivery of fertilizer materials in bulk to fertilizer factories for manufacturing purposes only." The Act is to take effect and be in force from and after its passage.

Oregon

Senate bill No. 287 proposes to amend the present law in several respects, including provisions for a "custom mix fertilizer" and "custom mix agricultural minerals" to be made on customer's specifications. Both classes are exempted from the brand registration fee, which fee also is reduced for "commercial fertilizer" from $10.00 a brand to $2.00. However, a new inspection fee of 20 cents a ton is provided.

Oklahoma

A bill (H. B. 323) proposes to collect an inspection fee of 35 cents a ton through the filing of quarterly tonnage reports with appropriate payments in place of the presently required inspection tax tags. The effective date proposed is July 1, 1949.

Reed Appointed Southern Manager of American Potash Institute

The American Potash Institute has announced the appointment of Dr. J. Fielding Reed as manager of its Southern territory, the position left vacant upon the election of Dr. H. B. Mann as president. Dr. Reed will assume his duties on July 1 st with offices in the Mortgage Guarantee Building, Atlanta.

A native of Louisiana, Dr. Reed attended the Louisiana State University, receiving a B.S. degree in chemical engineering in 1933, his M.S. in 1934, and a Ph.D. degree in 1937. In 1939–40 he held a Rockefeller Foundation post-doctorate fellowship at Cornell University. Returning to L. S. U., he served as Assistant Agronomist and Professor of Soils until 1942 when he accepted a position as Agronomist with the North Carolina Department of Agriculture and North Carolina State College. For two years he was in charge of soil fertility investigations with peanuts and in 1948 was co-winner of the $1,000 award of the National Peanut Council for contributions to the peanut industry. Since July 1948, he has been Director of the Soil-testing Division of the N. C. Department of Agriculture as well as Professor of Agronomy at N. C. State College.

Dr. Reed is a member of the Soil Science Society of America, American Society of Agronomy, American Chemical Society, American Association for the Advancement of Science, and the American Society of Plant Physiologists.

New Jersey Tonnage Increase in 1948

Sales of fertilizers in New Jersey during 1948 totaled 254,837 tons according to figures compiled by Stacy B. Randle, state chemist. This is an increase of five per cent over the 1947 consumption of 242,789 tons. Mixed fertilizers accounted for 227,593 tons or a little less than 90 per cent of the total tonnage. The 5-10-10 and 4-12-8 grades showed the largest sales.

Mixed Fertilizers	Tons
5-10-10	98,156
4-12-8	44,501
5-10-5	32,518
3-12-6	18,658
3-9-12	12,800
4-12-4	5,018
7-7-7	4,446
0-14-7	2,130
0-12-12	830
4-8-12	698
10-6-4	393
All others	7,445
Total	227,593

Materials	
Superphosphate	10,278
Nitrate of Soda	4,267
Organics	2,134
Cyanamid	2,712
Muriate of Potash	1,628
Bone Meal	886
Ammonium Nitrate	424
Sulphate of Ammonia	199
All others	4,716
Total	27,244
Total tonnage	254,837

Exports Drop, Imports Increase in 1948

Exports

The volume of fertilizers and fertilizer materials exported in 1948, 2,744,000 short short tons, was roughly 12 per cent below that of 1947. The value of the 1948 exports, $77,685,000, was approximately 17 per cent lower than that of the previous year.

The decline in outgoing shipments is attributable mainly to sharply cut exports of Florida high-grade hard phosphate rock and of Tennessee, Idaho and Montana rock. Exports of the former, which totaled 133,000 tons in 1947, declined by more than 32 per cent; exports of the latter were more than halved, totaling about 592,000 tons as compared with 1,269,000 tons for the earlier year. Other nitrogenous chemicals and concentrated chemical fertilizers also showed considerable decreases in quantities exported. Ammonium sulphate shipments, by contrast, were almost two and one-half times as great last year as the year before, and exports of Florida land pebble rock increased by almost 38 per cent. Normal superphosphate exports exceeded those of 1947 by about 58 per cent.

Imports

Fertilizer and fertilizer materials imports totaled 1,470,000 short tons last year, an increase of about 10 per cent over the 1947 tonnage, which in turn, had exceeded that of 1946 by about 6 per cent.

The largest individual item on the import list, sodium nitrate, registered the highest tonnage gain from 1947 to 1948, 721,000 tons having been received during the latter year as compared with 557,000 tons in 1947, an increase of almost 30 per cent. Imports of phosphate materials totaled 119,000 tons last year, a drop of about 12,000 tons, and accounted for only 8 per cent of all fertilizer imports, as compared with 10 per cent in the earlier year. Calcium cyanamide imports also showed considerable decline, totaling only 116,500 tons, or 37,000 tons less than during 1947. Potash materials showed no change in volume imported, although they declined slightly as a percentage of total imports.

EXPORTS AND IMPORTS OF FERTILIZERS AND FERTILIZER MATERIALS, IN SHORT TONS

SUMMARIZED BY THE NATIONAL FERTILIZER ASSOCIATION FROM U. S. DEPARTMENT OF COMMERCE RECORDS

EXPORTS*	1948	1947†	1946
Ammonium sulphate	210,491	88,602	25,257
Sodium nitrate	17,151	19,920	16,185
Other nitrogenous chemicals	627,614	683,503	117,378
Nitrogenous organic waste	9,352	8,585	6,976
Total Nitrogenous Materials	864,608	800,610	165,796
Florida: High grade hard rock	82,295	133,073	116,643
Land pebble rock	600,055	436,051	379,711
Other rock	944	1,911	1,033
Tenn., Idaho and Montana rock	592,018	1,269,112	211,953
Total Phosphate Rock	1,275,312	1,840,147	709,340
Normal superphosphate	399,345	257,279	167,376
Concentrated superphosphate	29,436	25,294	102,932
Other phosphate materials	1,123	1,265	1,139
Total Phosphate Materials	1,705,216	2,123,985	980,787
Muriate of potash	84,244	85,779	78,257
Other potash	19,936	17,161	18,565
Total Potash Materials	104,180	102,940	96,822
Concentrated chem. fertilizers	34,551	72,017	3,765
Prepared fertilizer mixtures	35,372	19,157	16,399
Grand Total	2,743,927	3,118,709	1,263,569
IMPORTS			
Ammonium sulphate	105,887	114,398	101,558
Ammonium nitrate mixtures	100,564	99,414	1,105
Calcium cyanamide	116,504	153,764	163,093
Calcium nitrate	9,761	8,848	3,300
Guano	32	0	589
Dried blood	3,355	4.109	483
Sodium nitrate	720,963	556,525	529,677
Ammonium phosphates	108,228	105,189	91,113
Tankage	7,981	8,407	5,227
Castor bean pomace	0	110	322
Fish scrap and meal	5,157	1,980	1,248
Other nitrogenous materials	14,689	12,452	142,213
Total Nitrogenous Materials	1,193,121	1,065,196	1,039,928
Bone phosphates	61,611	75,297	55,284
Normal superphosphate	3,026	6,638	2,754
Concentrated superphosphate	590	156	40
All other phosphates	53,908	48,694	66,908
Total Phosphate Materials	119,135	130,785	142,986
Muriate of potash	25,604	35,284	3,452
Other potash materials	11,911	12,531	4,924
Total Phosphate Materials	47,515	47,815	8,376
Other fertilizers	110,554	98,886	98,584
Grand Total	1,470,325	1,342,682	1,271,82[illegible]

*Export statistics include lend-lease and UNRRA shipments and also include shipments under the Army Civilian Supply Program after January 1, 1948.

†Revised to include shipments under the Army Civilian Supply Program during 1947.

FERTILIZER PROGRESS IN BIZONAL GERMANY

(Continued from page 10)

Ammonia Fixation. There is little or no possibility that important quantities of nitrogen in the forms of ammonia solutions and anhydrous ammonia can be applied economically as fertilizer directly to the soils of the Bizone in the near future, if at all. Use of nitrogen in this manner has never been practiced in Germany, and facilities are entirely lacking for the distribution and handling of such forms of nitrogen and for their application to the soil. Other obstacles include the small size of the farms and the adverse topography of much of the land. Resort must continue to be had, therefore, to conversion of the ammonia into solid forms.

Practically the entire Bizonal output of byproduct ammonia is marketed in the form of ammonium sulfate (21% N) manufactured at the coke plants. The synthetic ammonia, on the other hand, is converted into several products containing part or all of the nitrogen in the form of nitrate. These products and their approximate compositions are listed in Table V. The production of sodium nitrate is entirely in connection with the clean-up of tail gases in nitric acid manufacture. The calcium nitrate, produced only at Höchst, has the composition: $Ca(NO_3)_2$ 82.5%, NH_4NO_3 4.8%, and H_2O 12.7%. The ammonium nitrate raises the melting point from 40° C to 95° C and makes it possible to spray-granulate the product (*37, 38*). There are no facilities for manufacture of urea in the Bizone, and no installations of such facilities are programmed. Urea is made, however, at Oppau, French Zone (*17, 23*).

TABLE V. COMPOSITION OF SYNTHETIC AMMONIA FERTILIZERS PRODUCED IN THE BIZONE

Product	N, %	P_2O_5, %	K_2O, %
Ammonium nitrate-calcium carbonate mixture (kalkammonsalpeter)[1]	20.5	....	....
Calcium nitrate (kalksalpeter)	15.5	....	....
Ammonium sulfate-nitrate (ammonsulfatsalpeter)[2]	26.0	....	....
Sodium nitrate (natronsalpeter)	16.0	....	....
Nitrophoska	12.0	10.0	20.0
Kamp fertilizers	8.0	8.0	6.0

[1]Often referred to as calcium ammonium nitrate and commonly called Cal-Nitro in the United States.
[2]Also known as Leunasalpeter, Montansalpeter, and Leuna-Montan.

Nitrophoska is the name applied to a group of compound fertilizers the preparation of which involves treatment of phosphate rock with nitric acid or mixtures of nitric and sulfuric acids, neutralization with ammonia, and addition of potassium chloride (*9, 58, 64*). A wide range of compositions is possible. The example given (Table V) is that of the product which will be manufactured at Höchst beginning in 1950-1951. The Nitrophoska currently made at Oppau, French Zone, has the composition: N 10%, P_2O_5 8.5%, and K_2O 18%.

The compound fertilizer made by Chemische Fabrik Kalk G. m. b. H., Köln-Kalk, is known as Kamp. The process involves ammoniation of superphosphate and addition of ammonium nitrate and potassium chloride. The grade of product may be increased to 9% N, 9% P_2O_5, and 7% K_2O.

Aside from byproduct ammonium sulfate, five ammonia fixation plants, all of prewar age, are now in operation in the Bizone (Table II). Three of the plants (Hibernia, Ruhr-Chemie, and Victor) have coexisting facilities for manufacture of synthetic ammonia. With the exception of Höchst (*25*), all the plants suffered much damage during the war. Facilities for ammonia fixation, programmed to commence operation in 1949-1950, will be installed at a concentrated nitric acid plant (Langelsheim) and possibly also at another such plant (Embsen) (*49*), using ammonia produced at other locations. Höchst, with a programmed capacity of 40,000 tons of nitrogen in 1947–1948 and 72,000 tons in 1950–1951, is the most important of the ammonia fixation plants. The storage capacity at Höchst totals some 90,000 tons of finished products, and is larger by far than the storage capacity at any of the other fixation plants.

With the exception of the plant of Chemische Fabrik Kalk, ammoniation of superphosphate is practiced only to a negligible

extent in the Bizone. Other than for this plant, the ammonia-fixation program does not include the quantities of nitrogen that might be utilized in this manner. Normally, about one-third of the superphosphate consumed in Germany is used in mixed fertilizers and could be treated with approximately 2 per cent of nitrogen in the form of anhydrous or aqueous ammonia. At present, however, very little mixed fertilizer is produced in the Bizone, as its use is permitted only on home gardens.

Phosphate

Four types of phosphate fertilizers are produced in the Bizone, namely, superphosphate, basic slag, Rhenania-type phosphate, and compound fertilizers. The plants are listed in Table VI, while Table VII shows the expected plant capacity and production of the different kinds of phosphates for the fiscal years 1947–1948 and 1950–1951. The plant capacities programmed for 1947–1948 and 1950–1951 are only 46 and 68 per cent of the respective Bizonal requirements for P_2O_5

TABLE VI. PHOSPHATE FERTILIZER FACILITIES IN THE BIZONE

Company	Location of Plant
Superphosphate	
Chemische Düngerfabrik Rendsburg[1]	Rendsburg, Schleswig-Holstein
Chemische Kunstdüngerfabrik—Carl Unbefunde & Co.	Melle, Hannover Provinz
Chemische Werke Albert[1]	Wiesbaden-Biebrich, Hessen
Chemische Werke Rombach G. m. b. H.[1]	Oberhausen, Rhein Provinz
F. B. Silbermann	Offingen, Bayern
Gebrüder Reese	Bodenwerder, Hannover Provinz
Gesellschaft für Electrometallurgie—Dr. Heinz Gehm[1]	Nürnberg-Doos, Bayern
Guano-Werke A. G.[2]	Harburg, Hannover Provinz
Guano-Werke A. G.[1]	Krefeld-Linn, Rhein Provinz
Guano Werke A. G.[1]	Lübeck-Dänischburg, Schleswig-Holstein
Guano-Werke A. G.	Vienenburg, Hannover Provinz
H. Stodiek & Co., A. G.[1]	Löhne, Westfalen
H. Stodiek & Co., A. G.	Kaarst, Rhein Provinz
Jos. Loosen	Schlebusch, Rhein Provinz
Phosphatfabrik Hoyermann G. m. b. H.	Nienburg, Hannover Provinz
Süd-Chemie A. G.	Heufeld, Bayern
Süd-Chemie A. G. [1,3]	Kelheim, Bayern
Superphosphatfabrik Nordenham A. G.	Nordenham, Oldenburg
Rhenania-Type Phosphate	
Kali-Chemie A. G.	Brunsbüttelkoog[3] Schleswig-Holstein
Vereinigte Aluminum Werke A. G.[4]	Schwandorf-Dachelhofen, Bayern
Hütten-Chemie G. m. b. H.[5]	Mannheim-Rheinau, Württemberg-Baden
Basic Slag	
August Thyssen Hütte A. G.	Duisburg-Hamborn, Rhein Provinz
Dortmund-Hörder Hüttenverein A. G.	Dortmund, Westfalen
Eisenwerk Gesellschaft Maximilianhütte m. b. H.	Sulzbach-Rosenberg, Bayern
Hüttenwerk Dortmund A. G.	Dortmund, Westfalen
Hüttenwerk Haspe A. G.	Hagen-Haspe, Westfalen
Hüttenwerk Hörde A. G.	Dortmund, Westfalen
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Reichswerke A. G. für Erzbergbau ü. Eisenhütten	Wattenstedt-Salzgitter, Braunschweig
Compound Fertilizers	
Chemische Fabrik Kalk G. m. b. H.[6]	Köln-Kalk, Rhein Provinz
I. G. Farbenindustrie A. G.[7]	Höchst, Hessen

[1]Plant has coexisting facilities for manufacture of sulfuric acid.

[2]Plant destroyed during the war; expected to be rebuilt by 1950–1951.

[3]New plant, expected to be completed in 1950–1951. The company already has a sulfuric acid plant at Kelheim.

[4]Former alumina plant; commenced production of phosphate fertilizer in January, 1948.

[5]Expected to commence operation in July, 1948.

[6]The phosphate plant, destroyed during the war, is being rebuilt and is expected to be ready for operation by July, 1948. It will produce ammoniated superphosphate for use in manufacture of mixed fertilizer (grade 8–8–6 or 9–9–7).

[7]A plant for production of Nitrophoska (grade 12–10–20) is expected to be in operation in summer of 1951.

(Table I). Correspondingly, the expected productions are 76 and 88 per cent of the capacities, and this relationship is not greatly different from that for nitrogen and potash. As previously pointed out, however, the expected production of P_2O_5, as well as the plant capacity, will fail by a much larger margin to meet the requirement than will be the case with either nitrogen or potash. The discrepancy is due chiefly to the great decrease in production of basic slag since the war. Thus, it is estimated that the Bizonal production of basic slag in the fertilizer year 1938–1939 amounted to 362,300 tons of P_2O_5 (*43, 44*), as compared with only 54,000 tons in the fiscal year 1947–1948 and an expected production of 130,000 tons in 1950–1951. This situation results, of course, from the greatly lowered output of steel to which the production of basic slag is inseparably geared. The present Level of Industry Plan for the Bizone restricts steel production to a quantity much below the output in 1938–39.

TABLE VII. PLANT CAPACITY AND PRODUCTION OF TYPES OF PHOSPHATE FERTILIZERS IN THE BIZONE

Fiscal Year[1]	Capacity, Tons P_2O_5	Production Tons P_2O_5	Production % of Capacity
	Superphosphate[2]		
1947–48	81,500	50,000	61.3
1948–49	101,000	80,000	79.2
1949–50	106,100	85,000	80.1
1950–51	120,900	97,000	80.2
	Basic Slag		
1947–48	[3] 54,000	54,000	100
1948–49	[3] 84,000	84,000	100
1949–50	[3]108,000	108,000	100
1950–51	[3]130,000	130,000	100
	Rhenania-Type Phosphate[4]		
1947–48	30,000	21,000	70.0
1948–49	56,000	30,000	53.6
1949–50	61,000	40,000	65.6
1950–51	63,000	49,000	77.8
	Compound Fertilizers		
1947–48	......	....	....
1948–49	9,000	6,000	66.7
1949–50	11,000	9,000	81.8
1950–51	14,000	12,000	85.7
	Total Phosphate		
1947–48	165,500	[5]125,000	75.5
1948–49	250,000	[6]200,000	80.0
1949–50	286,100	[6]242,000	84.6
1950–51	327,900	[6]288,000	87.8

[1]Ending June 30.
[2]The capacity figures are based on operation for one 8-hour shift, 6 days per week.
[3]Estimated production.
[4]The capacity figures are based on continuous operation, with allowance for shutdown for repairs, replacement of equipment, and other normal interruptions to operation.
[5]In addition, about 8,000 tons of P_2O_5 were produced in the form of ground raw phosphate rock for direct application to the soil.
[6]Not including ground raw phosphate rock for direct pplication to the soil.

Phosphate fertilizers were formerly made from elemental phosphorus manufactured by the electric furnace process in a large plant at Piesteritz and in a very much smaller one at Bitterfeld, both in the Soviet Zone (*7, 9, 36. 48, 54, 55, 58, 64*). The Piesteritz plant has been dismantled since the close of the war. In addition to phosphate fertilizers, Germany had a fair-sized industry for production of technical and industrial phosphates by the electric furnace and sulfuric acid processes (*7, 36, 48, 54, 55, 56, 67, 73, 74, 80*).

Although Germany has no commercial deposits of phosphate rock the world position as regards this material is such that only minor difficulty, if any, should be experienced in meeting fully the Bizonal requirements. Currently, the Bizone is adequately supplied with raw phosphate. Much of the material, however, is low grade, which results in decreased plant output of available P_2O_5 and excessive consumption of sulfuric acid and other chemicals.

(To be continued)

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